

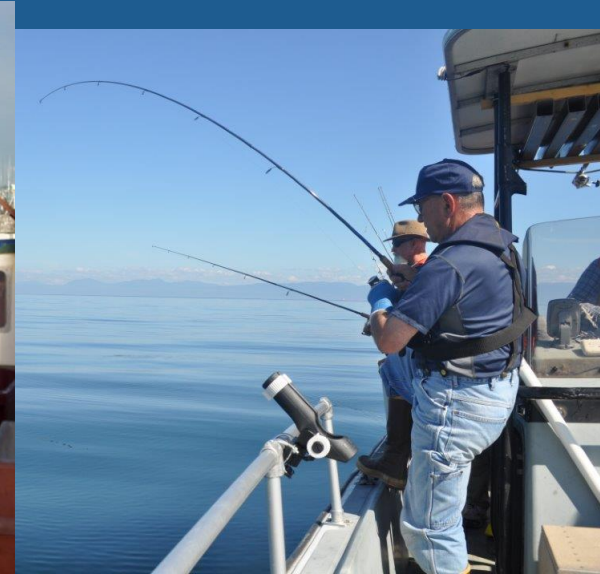
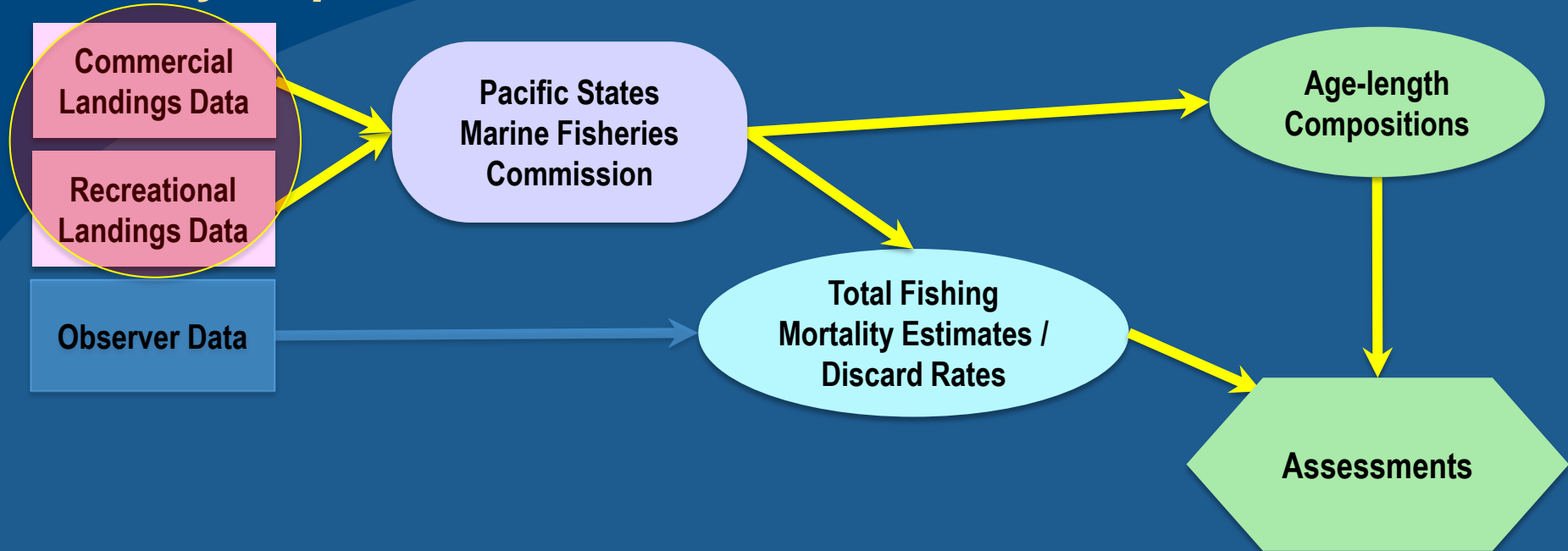
# State of Washington Groundfish Fishery-Dependent Data

Theresa Tsou

Washington Department of Fish & Wildlife  
Olympia, WA

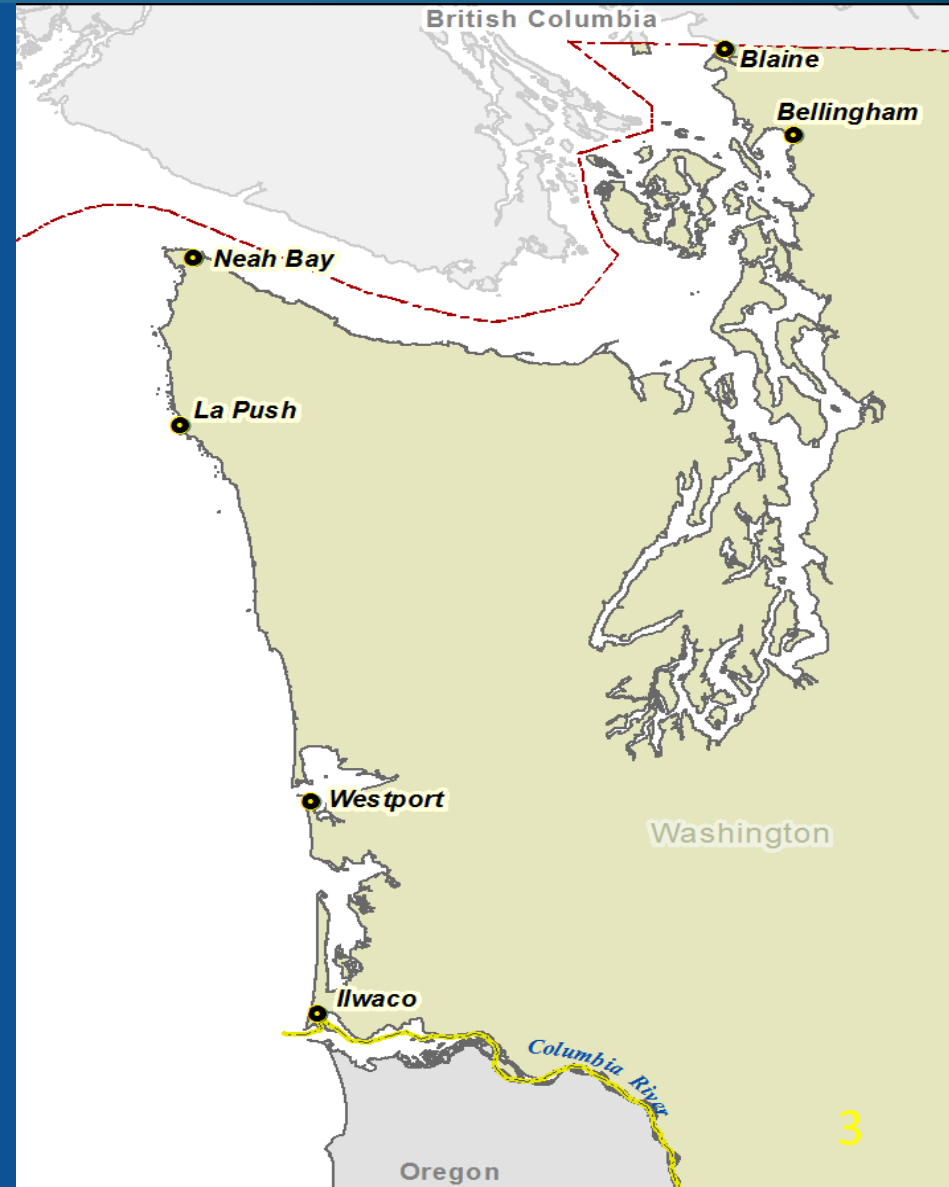
# Fishery Data Flows

## Fishery Dependent Data

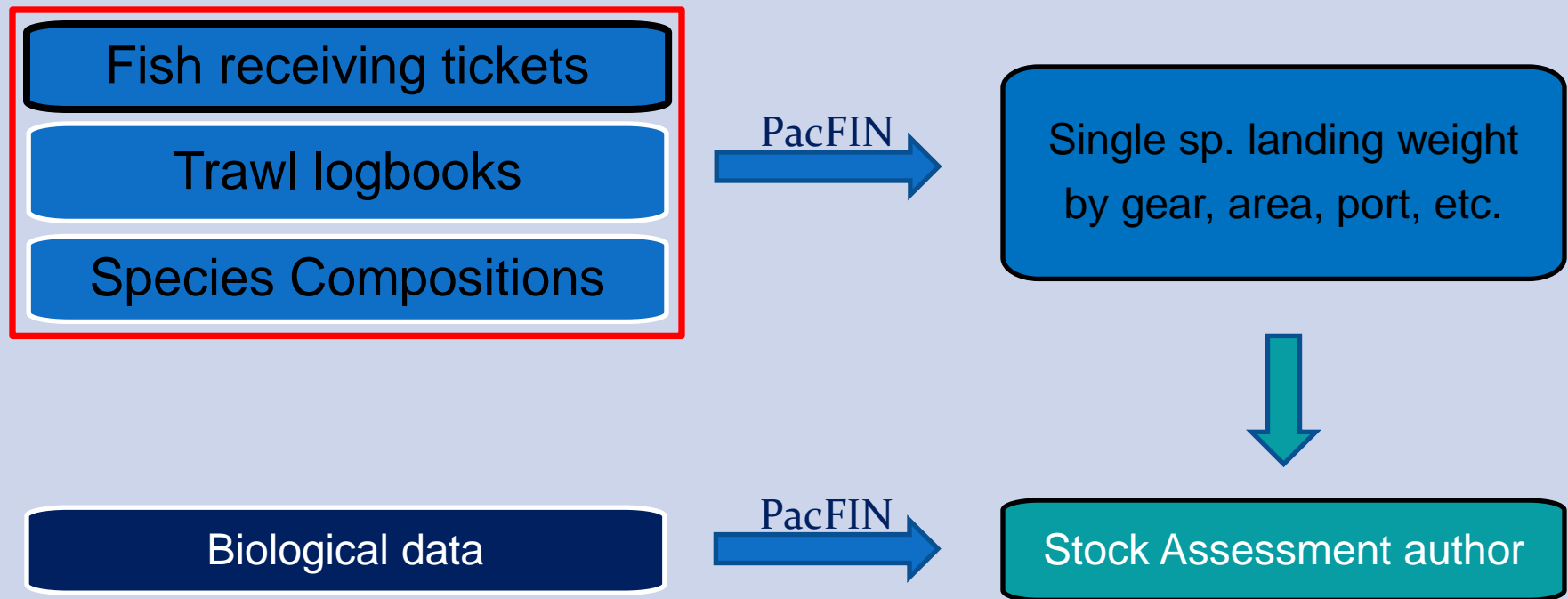


# Data Collection – WA vs. OR

- Very similar
- No near-shore commercial fisheries
- No live fishery
- Less ports/access points
- Smaller fleet
- Less processors/buyers



# Commercial Groundfish Fisheries Data Collection



# WDFW Fish Tickets

## (fish receiving tickets)

- License/permit, gear, catch area
- Species/Market category
- Landing condition, size
- Landing weight and price
- E-ticket only for IFQ fishery

WFG BY KARY SMITH (405) 229-6000 (1-800-422-0867)

Y

FISHER OR OWNER \_\_\_\_\_

ADDRESS \_\_\_\_\_ DATE \_\_\_\_\_

BOAT NAME \_\_\_\_\_ DEALER \_\_\_\_\_

GEAR \_\_\_\_\_ WDFW BOAT REGISTRATION \_\_\_\_\_ BUYER \_\_\_\_\_

FED. LE PERMIT # \_\_\_\_\_

IPHC LICENSE # \_\_\_\_\_

Fisher Signature \_\_\_\_\_ Dealer's Signature \_\_\_\_\_

Under penalty of perjury, I certify that the information contained herein is true and complete.

**STATE OF WASHINGTON**  
**DEPARTMENT OF FISH AND WILDLIFE**  
**MARINE FISH RECEIVING TICKET**

Number of Days Fished \_\_\_\_\_ Fish Caught Inside 3 Miles \_\_\_\_\_ Catch Area \_\_\_\_\_  
 Fish Caught Outside 3 Miles \_\_\_\_\_  
 Fish Caught Outside Enhancement Zone \_\_\_\_\_

**CIRCLE PHYSICAL GEAR ACTUALLY USED**

OTTER TRAWL 32 PURSE SEINE 69 SET LINE 43 DRAG SEINE 12 HAND LINE 42 SHRIMP TRAWL 33 POT 23 TROLL 41 OTHER (specify) \_\_\_\_\_

DEALER USE	SPECIES CODE	SPECIES DESCRIPTION	POUNDS	PRICE	AMOUNT
	221	SABLE FISH - ROUND			
	221	SABLE FISH - DRESSED <1			
	221	SABLE FISH - DRESSED 1-2			
	221	SABLE FISH - DRESSED 2-3			
	221	SABLE FISH - DRESSED 3-4			
	221	SABLE FISH - DRESSED 4-5			
	221	SABLE FISH - DRESSED 5-7			
	221	SABLE FISH - DRESSED 7+			
	205	DOVER SOLE			
	207	PETRALE SOLE			
	213	ARROWTOOTH FLOUNDER			
	231	LING COD			
	241	TRUE COD			
	243	SHELF ROCKFISH			
	249	SLOPE ROCKFISH			
	256	SHORT SPINE THORNYHEAD			
	291	OTHER SKATE			
	293	LONGNOSE SKATE			
	246	DARKBLOTCHED ROCKFISH			
	125	SARDINE			
	292	HAGFISH			
	201	HALIBUT - HD/ON - < 23#			
	201	HALIBUT - HD/ON - 23# +			
	101	ALBACORE TUNA			

**TAKE HOME FISH**

DEALER USE SPECIES CODE SPECIES AND DESCRIPTION NO. OF FISH POUNDS NAME

SIGNATURE

NAME

SIGNATURE

1 2 3 4 5 6 7 8 9 10 TOTAL AMOUNT LESS: DEDUCTIONS AMOUNT PAID

FORM WDFW-578 (1/1/06)



# Fish Ticket – Weight Conversion

Not all fish landed whole!



# Fish Ticket – Weight Conversion

Impacts of the conversion varied by species.

Year	Round	Head-Off	Head-On
2002	50	696	
2003	102	1,001	
2004	151	1,064	
2005	321	1,004	
2006	251	1,054	
2007	196	742	
2008	99	777	
2009	399	753	
2010	336	722	
2011	448	680	18
2012	349	633	

WDFW value: x 1.60    x 1.12  
Sea Grant value: x 1.47    x 1.12

Year	Round	Head-Off	Head-On	Fin
2002	1,205	1.69	0.15	
2003	1,148	0.51		
2004	1,421	1.02		
2005	856	0.99		
2006	501	2.28		
2007	503	0.58		
2008	524	0.17		
2009	928	1.93	0.54	
2010	990	1.80	2.85	
2011	1,069	1.98	0.08	
2012	1,345	3.91	0.13	0.01

WDFW value: x 1.43    x 1.14  
Sea Grant value: x 1.75    x 1.14

↓  
**Lost**  
**Data error?**

**WASHINGTON – OREGON – CALIFORNIA**

**TRAWL  
LOGBOOK**

Nº 4577

- Coastwide logbook, 1976-present (1987- in PacFIN)
- WA, 2012: 247 total non-treaty trawl trips, 95% log returns



# Trawl Logbook Data Synthesis

- Logbook–Fish Ticket Reconciliation

Market category landing by tow =  
(Fish ticket weight) x (Logbook hailed  
weight proportion)

- Area Compositions - Only for trawl fleet

Strata: month, port, market category

- Monthly data-feed to PacFIN

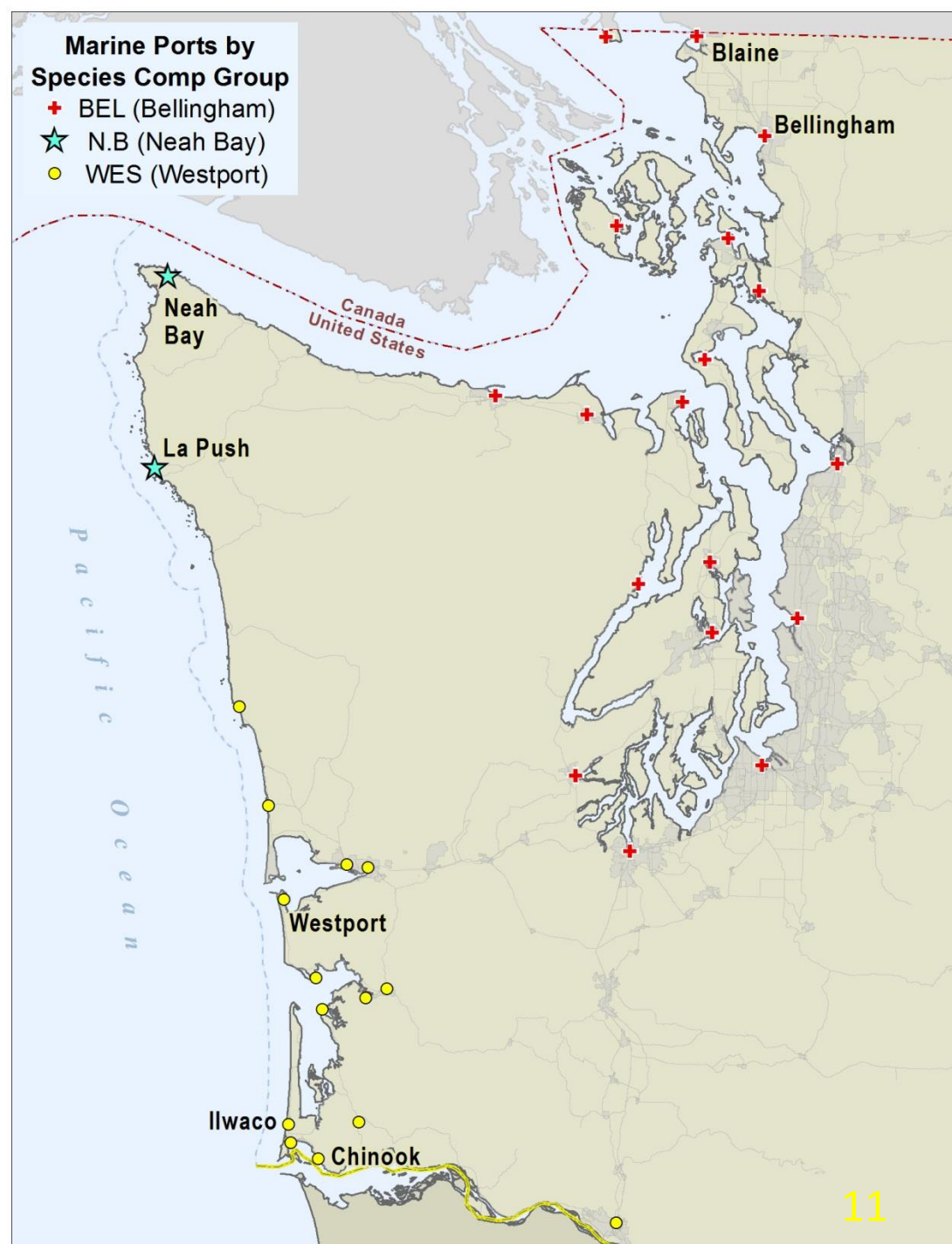
# Species Composition Data Collection

## Sampling design

- Strata: quarter, port group, gear group
- Random/opportunistic vessel selection
- One, three-basket sample
- Sampling goal – 20% of landing events.
- Quarterly data feed to PacFIN

# Species Comp Data Collection

- Market category
  - Near-shore
  - Shelf rockfish
  - Slope rockfish
  - Single species
- Port groups
  - Bellingham
  - Neah Bay
  - Westport
- Gear groups
  - Trawl
  - Setline



# Species Comp Sampling Rates

Percent of Annual Landing Distributed by “borrowed” Comps

	Nearshore	Shelf	Slope	Total
2002	26%	6%	6%	6%
2003	26%	18%	0%	4%
2004	64%	20%	23%	23%
2005	4%	18%	0%	3%
2006	12%	18%	0%	3%
2007	34%	76%	3%	9%
2008		36%	3%	6%
2009		27%	13%	14%
2010		50%	11%	16%
2011		18%	2%	5%
2012		48%	3%	7%

# Species Comp Sampling Rates

Percent of Annual Landing Remained in Market Category

	Nearshore	Shelf	Slope	Total
2002	71%	7%	1%	4%
2003	23%	2%	6%	6%
2004	6%	5%	1%	1%
2005	88%	6%	4%	5%
2006	19%	16%	3%	5%
2007	4%	16%	1%	2%
2008	100%	11%	0%	1%
2009	100%	11%	0%	1%
2010	100%	15%	4%	5%
2011	100%	80%	4%	17%
2012	100%	2%	3%	3%



# Biological Data Collection

## Sampling design

- Strata: species and gear
- Random/opportunistic sampling
- Length, sex, maturity, ageing structures
- Ageing lab
- Monthly data feed to PacFIN



# Data Collection – Challenges

## Fish tickets and logbooks

- Completeness in fish ticket and logbook
- Weight conversion update?
- Port of landing?
- Fishing trip?

# Data Collection – Challenges

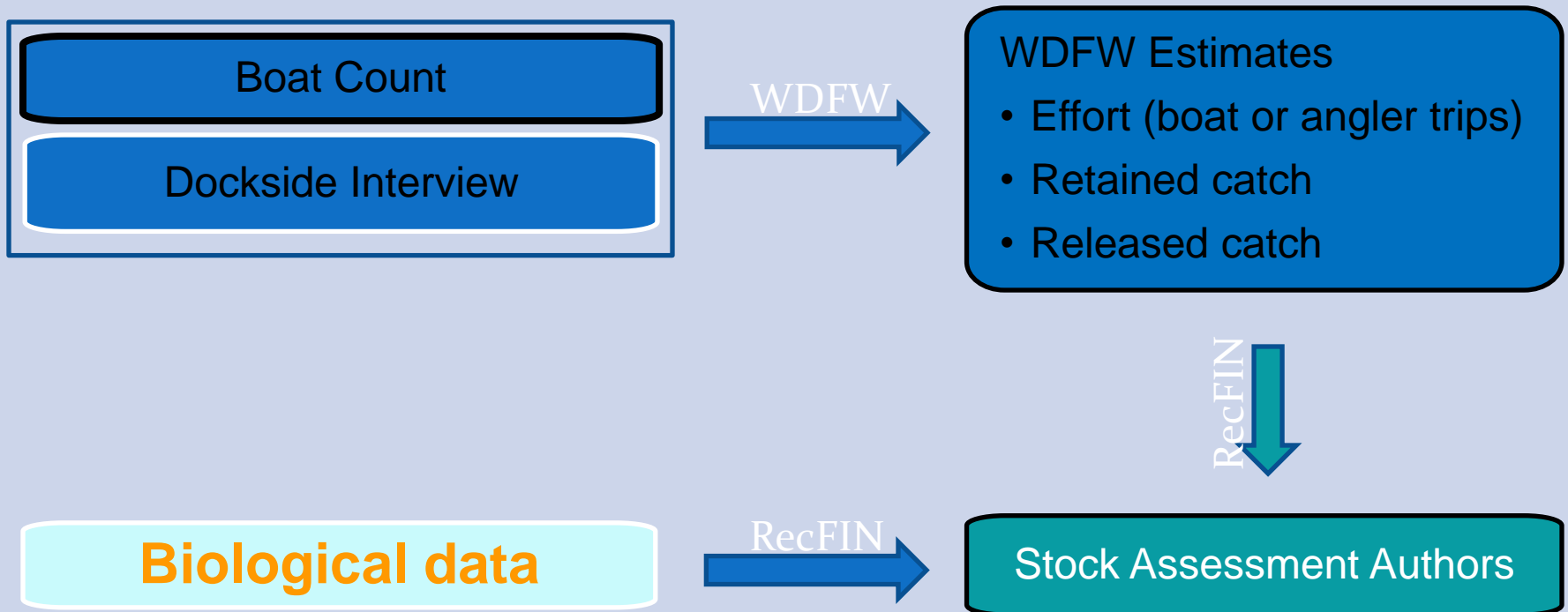
## Species composition and bio-samples

- Sorting prior to sampling
- Length type conversion – TL, FL, SL, headed length, interspiracular width
- Adequate sample size?
- Gear group – reasonable? Other gears?
- Weighting – by sample weight or landing weight?
- Species composition “borrowing” strategy<sup>16</sup>

# Data Synthesis Challenges

- Split landings between WA and OR
- Historical catch
  - Spatial – Canadian, Puget Sound
  - Species composition data – very broad market category, e.g. rockfish
  - Weight conversions – fish liver
- Data retrieval from PacFIN

# WA Recreational Fishery Data





# WA Coastal Recreational Survey Ocean Sampling Program (OSP)

- Sampling strata
  - day type – weekend/week day
  - boat type – charter, private, land-based
  - port
- Post-stratified for catch estimation by
  - management area & time frame
  - trip type – salmon, halibut, groundfish

$$Catch_{total} = \frac{Effort_{total}}{Effort_{interviewed}} \times Catch_{inspected}$$

# OSP - Strengths

## MRIP reviewers' comments:

- Careful design in all of its aspects, and rigorous randomization.
- A clear and clean match between the sampling design and the estimation methods, including appropriately weighted estimates and variance estimation procedures.
- The methodology is nearly assumption-free, given its rigorous basis in probability sampling.

# OSP – Challenges

- Fishing area – only allow one per interview
- Depth of fishing – only allow one per interview
- Aggregated species groups - flatfish
- Catch area does not match PFSMC area
- New demands on release mortality estimates
  - *Depth* is NOT a stratum
  - *Usage of fish releasing device* is NOT a stratum
- RecFIN ???? → Stock assessment authors

# Solutions

- Funding for baseline sampling and data processing
- Within WDFW coordination
- Better collaboration with PacFIN, RecFIN
- Improve communication with the stock assessment authors



